

AM/FM Stereo Receiver with Quatravox® 4-Channel Synthesizer



STA-47

OWNER'S MANUAL

PLEASE READ BEFORE
USING THIS EQUIPMENT

REALISTIC®

Cat. No.
31-2057

CUSTOM MANUFACTURED FOR RADIO SHACK  A TANDY CORPORATION COMPANY

REALISTIC®

THE BRAND WITH OVER 1,000,000 CUSTOMERS



Speakers Recorders Components P.A.Products Radios Phonographs

REALISTIC AUDIO PRODUCTS are the proud result of Radio Shack engineering, research, development, and over 45 years of experience in electronics. Laboratories are maintained in Boston, Ft. Worth, Los Angeles, and abroad. In every sense a national brand, the Realistic label is worn with equal distinction by our highly original Communications and Citizens Band (two-way radio) products, and numerous other items including: tape, headphones, antennas, intercoms, and tubes.

In choosing this fine Realistic product you have demonstrated a rather acute awareness of the good old American custom called "getting the most for your money". With Realistic this is not an idle boast.

The "line" was born in Boston, long famous for Yankee ingenuity — and thrift. Its original intent was to bridge a gap between \$100 equipment and \$25 equipment where, at the time, there was a real void in hi-fi merchandise.

Early products were a \$39.95 FM tuner, a \$29.95 preamp/amplifier, a \$19.95 speaker. Soon we found ourselves a unique niche as manufacturing retailers.

Capacity and ability grew simultaneously. Our Realistic Electrostat-3® electrostatic tweeter — now used in the Electrostat-2A speaker — was called a "best buy" by the country's leading product-review magazine. Our 10TRF radio out-performed practically anything then available. And dealers from all over the world began requesting a Realistic franchise.

Recent "firsts" include: the first medium cost DC/AC communications receiver totally engineered in solid state — the Realistic DX-150; the first properly designed low-cost police band radio — the Realistic Patrolman; the Realistic Optimus-1 loudspeaker, bringing "over \$120 sound" down 33%; the first lifetime-guaranteed vacuum tube; and the Realistic STA-120 stereo receiver which combined massive power, modern styling, and a veritable host of new ideas — at a cost fully \$100-\$200 below its value under traditional marketing practices.

General Description

Your STA-47 represents one of the best values available today in a high-quality receiver. It's power and versatility make it an outstanding buy.

- 62 watts (total) of clean IHF music power will drive almost any speaker system — even two sets of stereo speakers!
- The FM section boasts excellent sensitivity and separation for the best stereo sound. FET's and IC's provide extra reliability.
- Built-in Quatravox™ simulates 4-channel effects from stereo sources — and it only requires a second set of stereo speakers.
- A wideband tuner gives hi-fi sound even on AM.
- A factory-mounted walnut veneer case, and you don't pay a penny extra.

GUARANTEE: the Realistic guarantee is stated on the guarantee card packed with the equipment. It is in effect from coast to coast. At any time, Realistic equipment may be restored to new condition with original parts with MINIMUM delay anywhere in the U.S.A., usually in your own neighborhood. In 98% of the cases; it is NOT necessary to return Realistic equipment to our Laboratories.

NOTE: Before connecting the STA-47 please read the following instructions. They will insure your getting the most enjoyment from your new receiver.

Specifications

Preamplifier-Amplifier

Audio Output Power at 1% THD into 8 ohms, over the audio spectrum, 20 to 20,000 Hz = 12 watts (RMS Power, both channels driven).

Audio Output at 8 ohms (both channels driven)
31 watts/channel IHF ± 1 dB (62 watts total)
18 watts/channel RMS at 1 kHz (36 watts total)
Power Bandwidth 15 - 50,000 Hz
Sensitivity (for full output) PHONO 3 mV
AUX 1, 2 150 mV
Tape Output Level 250 mV
Signal-to-Noise Ratio -60 dB (all inputs)

FM Tuner

Sensitivity	3 μ V, IHF
Stereo Separation (1 kHz)	35 dB
Image Rejection	50 dB
Harmonic Distortion	0.7 %
Capture Ratio	3 dB

AM Tuner

Sensitivity	10 μ V for 20 dB S+N/N (terminal sensitivity)
Selectivity	28 dB
Image Rejection	45 dB
Signal-to-Noise Ratio	-45 dB

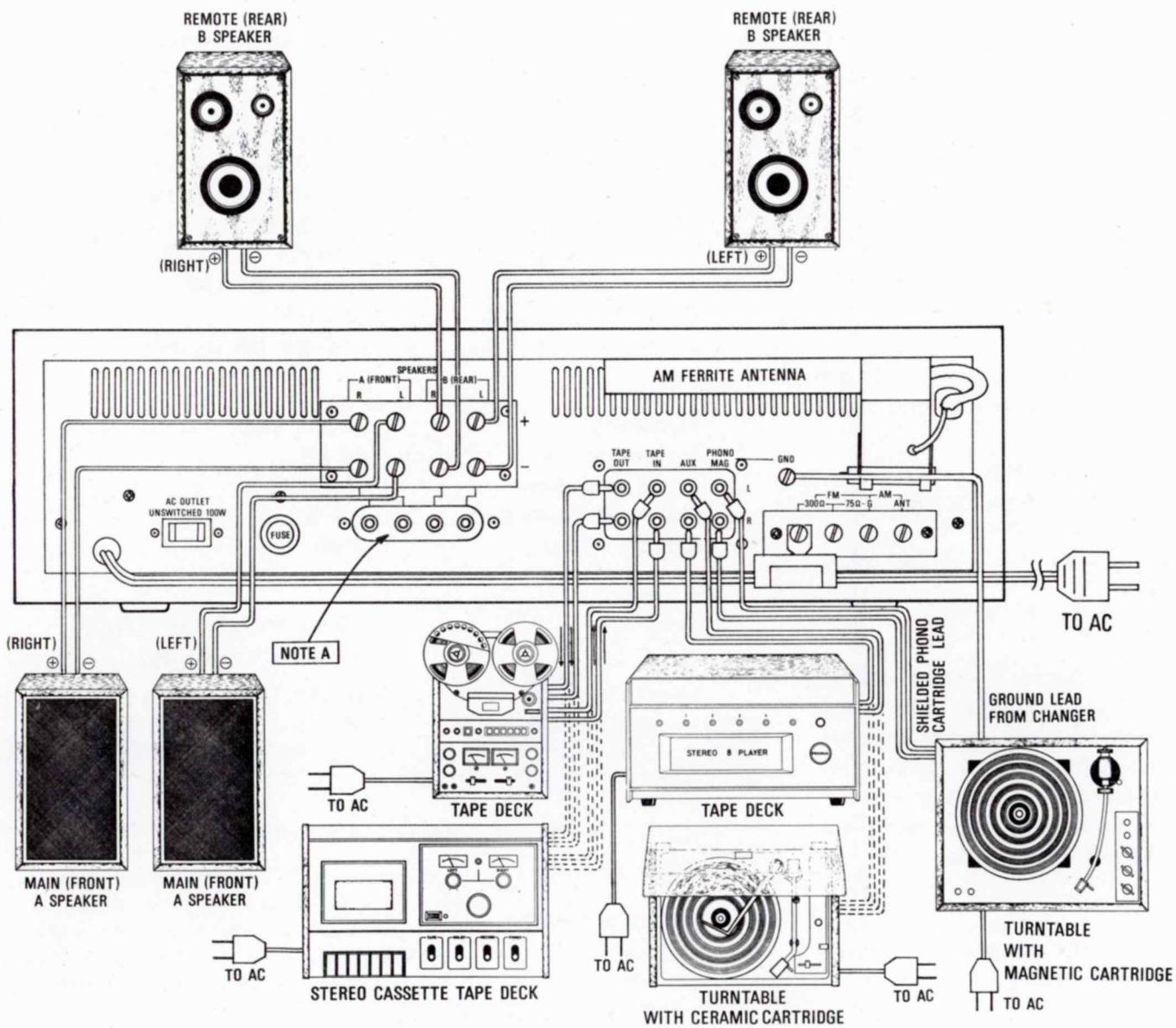
Antennas

Built-in ferrite AM; line-cord FM, plus terminals for external antennas.

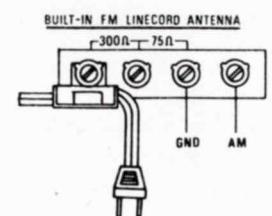
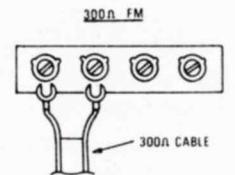
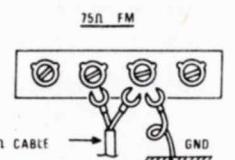
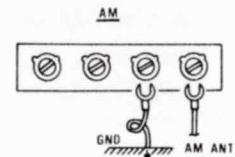
Power Requirements

120 VAC, 60 Hz (200 watts max.)
(220/240 VAC, 50 Hz for European and Australian models as indicated on rear of unit).

A Typical System: STA-47, Turntable, 4 Speaker, Tape Deck



[Note A]:
For Main (FRONT/A)
Speaker pair and
Remote (REAR/B)
Speaker pair if leads
have RCA-type phono
plugs only.



Connecting the STA-47

SPEAKERS

No stereo system sounds better than its speakers. So we recommend you buy the best speakers you can afford, especially for the main (or front) speakers. The Realistic Minimus® series should represent a basic level while the Optimus® or Nova® series would be preferable. The remote (or rear) speakers can be the same or less expensive, although the Realistic Solo® series should be a minimum.

The STA-47 built-in Quatravox lets you hear sounds from your stereo records that you've never heard before. By just adding a second set of stereo speakers this circuit simulates 4-channel sound.

Most stereo recordings contain ambient (reflected) sound which an ordinary stereo system loses. Quatravox plays these sounds through the rear speakers and actually recreates the acoustics of the studio or concert hall. The degree of 4-channel effect varies with the type of music you listen to and the way it was recorded.

If your speakers have RCA phono jack connectors, hook them up to the RCA jacks on the receiver's rear panel. If your speakers have only screw terminals, use two-conductor lamp or speaker wire to connect them to the screw terminals on the STA-47. Connect the main/front speakers to "A/FRONT" and the remote/rear speakers to "B/REAR".

NOTE: When using the screw terminals be sure to observe proper polarity. Most speaker wire is clearly marked with a raised line along one conductor, or has one wire a different color from the other. Connect the (+) receiver output with the (+) or "marked" (color dot or other marking) speaker terminal, and the (-) output to the (-) or unmarked speaker terminal. Do not allow stray strands of wire to touch adjacent terminals or the metal chassis.

NOTE: Use no more than four speakers with the STA-47. You must choose between remote speakers and Quatravox (since you can not use both remote speakers and rear Quatravox at the same time).

To prevent continual tripping of the automatic overload protection circuit, use 8 or 16 ohm speakers if you plan to use more than one pair of speakers. If you use 4 ohm speakers, use only one pair; either for "A" (Front) or "B" (Rear), but not both.

PHONOGRAPH

For convenience most people prefer a record changer (often called an automatic turntable) to a manual turntable. Realistic, Miracord, Dual, BSR and Garrard all make good automatic turntables. Be sure your turntable has a magnetic cartridge with an output of at least 3 mV.

Connect your turntable shielded cables to the PHONO MAG receiver inputs. You may plug the turntable's line-cord into the AC OUTLET (UNSWITCHED) or into a wall socket.

To minimize hum, connect the turntable's green or black ground wire to the GND (ground) screw on the rear panel.

TAPE DECK

Until recently, reel-to-reel tape machines were the only choice for people seriously interested in hi-fi. But recently vast improvements have been made with cassettes; for example, the widespread use of Dolby noise reduction and the introduction of high-performance tapes. The best cassette decks now rival reel-to-reel machines.

Eight-track recorders have only slightly less fidelity than cassettes or reel-to-reel, but have several advantages. You can play car tape cartridges at home and save money by recording your own tapes. In addition 8-track cartridges are continuous loops, will play for hours and require no attention.

Using shielded cable connect the STA-47's TAPE OUT jacks to the tape recorder's input, usually labeled AUX/LINE IN. Connect the tape deck output to the Receiver's TAPE IN jacks. Plug the deck's line cord into the AC OUTLET (UNSWITCHED) or into a wall socket.

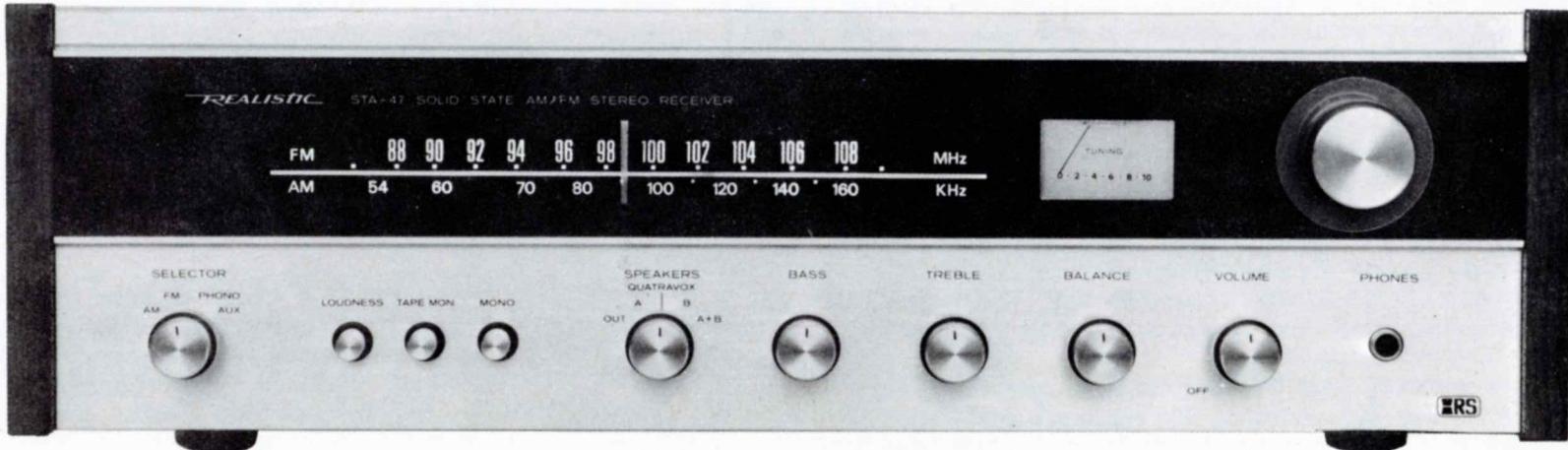
A second tape player (8-track, cassette or reel-to-reel) can be connected to one of the pairs of AUX Input jacks. Thus, you can play tapes when using the AUX position of the Selector switch.

Any other high-level sound source can be connected to the AUX In jacks - another tuner, a record player with ceramic or crystal cartridge, TV sound, etc.

FM and AM ANTENNAS

The built-in antennas are adequate for most areas, for other antenna provisions see page 9.

Front Panel



Before plugging the receiver in —

- Check VOLUME, set it to "OFF" position.
- Put all other pushbutton switches in the "out" position.
- Make connections as shown on page 4.

OPERATING INSTRUCTIONS

Turn the VOLUME clockwise until the click is heard. Select one of the inputs by turning the SELECTOR switch (at the extreme left) to the desired source.

Set the SPEAKERS switch to the desired position. "A" selects the main/front speakers only; "B" selects only the remote/rear speakers. "A+B" plays the same program through both sets of speakers. "Quatravox" feeds slightly different signals to the "B" speakers, which then function as the rear sound for simulated 4-channel sound. The "Out" position permits you to turn off all the speakers for headphones listening.

Adjust VOLUME to the desired level. Turn the BALANCE control until you feel a slight catch near the 12 o'clock position. At this position the two speakers play with equal volume. The balance control can compensate to some extent for off-center listening positions, variations in listening room conditions or defects in the original recording.

The three pushbutton switches at the left should be "out" for normal listening. For mono operation press in the MONO button.

At their center settings the BASS and TREBLE controls do not affect the tone and you will hear "flat" (unaltered) sound. To increase the bass or treble turn the desired control clockwise; to decrease, turn the controls counterclockwise. In this decreased position the tone controls can reduce hiss (high pitched noise) or rumble (low frequency noise). The LOUDNESS button boosts low and high frequencies at its in position. This compensates for the ear's lack of sensitivity to extreme bass and treble at low volumes.

FM

Turn the SELECTOR switch to FM and adjust the Tuning knob for the desired station. Fine-tune for maximum reading on the TUNING meter.

The dial pointer will change from yellow to red when you tune in a station broadcasting in stereo. Any time the pointer is red, you know you are listening to a stereo FM station. For AM or monaural FM signals (or if you press MONO switch in), the dial pointer will be yellow.

With the MONO button in its normal (out) position, the tuner will automatically switch from mono to stereo when tuned to a stereo station.

AM

Turn the SELECTOR switch to AM and adjust the Tuning knob for maximum reading on the TUNING meter. Position the ferrite core antenna (rear panel) for the best reception.

PHONOGRAPH

Turn the SELECTOR switch to PHONO and adjust the VOLUME and Tone controls.

For the best sound and longest record life, do not track your cartridge below the recommended force. Light tracking may actually cause more distortion than heavy tracking.

TAPE

Playback

Press the TAPE MONitor button in and adjust the VOLUME and Tone controls. (TAPE MON overrides any position of the SELECTOR switch.)

NOTE: If you leave TAPE MON pressed in, you will not be able to hear the receiver's FM, AM or Phono function.

Record

Set the SELECTOR switch to the desired input and adjust the amplifier controls for your own enjoyment (VOLUME, BALANCE and Tone controls do not affect the output to the tape recorder).

When using a three-head tape deck you can listen to the tape while still recording. Just press the TAPE MONitor button in.

For the best operation of your tape recorder clean the heads frequently with isopropyl alcohol and a cotton swab. For lowest distortion and tape noise use one of the tape head demagnetizers available at your Radio Shack store.

OPERATING INSTRUCTIONS (cont.)

AUX INPUT

Turn the SELECTOR switch to the desired input and adjust VOLUME, BALANCE and Tone controls. The auxiliary inputs can be used for any high-level source such as a tape player, a second tuner, TV, ceramic or crystal phono cartridge, ham radio, etc.

HEADPHONE JACK

The PHONES jack is "live" at all times. To listen only to the headphones turn SPEAKERS switch to "Out".

OVERLOAD INDICATOR

An electronic circuit protects the power transistors of your receiver from overloads. When it senses a potentially harmful load—such as shorted speaker leads—the indicator light at the upper right end of the tuning scale will glow and the sound will go off.

If this should occur, turn the receiver off (this will automatically reset the protective circuit). Find the cause—shorted speaker leads, frayed insulation, etc. When the problem is corrected, turn the receiver on again.

FUSE

If fuse blows, do not replace with higher rating fuse. Use only 2A rated fuse.

HINTS FOR BETTER SOUND

Quatravox Speaker Placement

Where you put the speakers is more critical with 4-channel than it is with stereo. So before you settle on one position try several others — either those illustrated or ones dictated by your listening room.

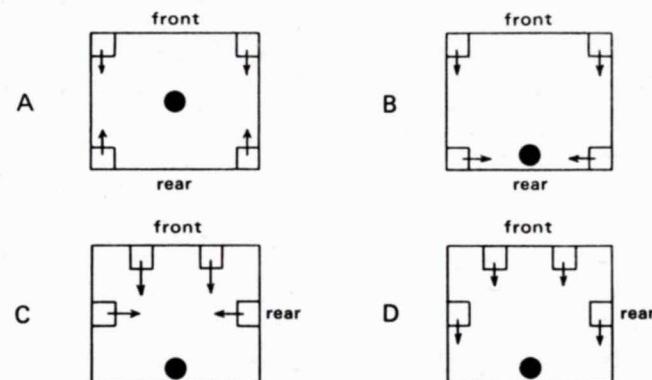
The theoretically ideal position, one speaker in each corner of a room with the listening position in the center, is shown in Figure A. Since this arrangement is inconvenient in many home installations you may want to modify it. Figure B represents the situation in many homes. The listener faces the two front speakers while the rear speakers face each other.

Figures C and D produce a different type of sensation. Instead of being surrounded by sound, the two rear speakers create a sense of depth — as if you were sitting in the audience at a live performance. Depending on the size of your room and the dispersion of your rear speakers you may want them to face you or to face each other.

There are almost an infinite number of satisfying speaker locations for Quatravox, so if one of these doesn't suit your needs invent your own.

Speaker Arrangements for Quatravox

● = listener's position ↑ = direction of sound

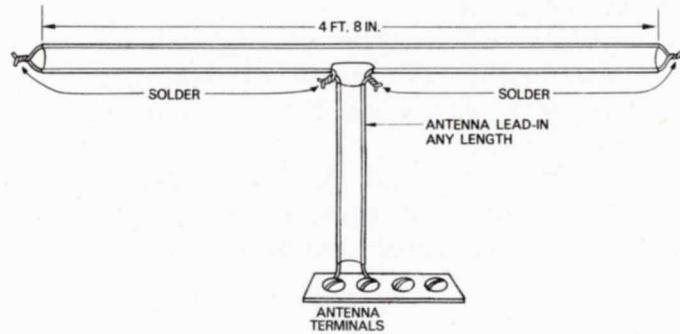


All arrangements based on 6-8' minimum front speaker separation.

Antennas

Under most conditions your STA-47's built-in antennas should be adequate for AM and FM reception. If you cannot get adequate reception, try one of the arrangements listed below. Your Radio Shack salesman knows about reception difficulties in your area.

For FM, build the very low-cost folded-dipole (illustrated). Just splice regular 300 ohm lead-in wire as shown. Apply a small amount of solder and heat the twisted ends until it flows evenly over each strand of wire. This antenna can be tacked to the back of a record cabinet or onto a wall — the higher the better. Your Radio Shack store carries such an antenna, Catalog Number 42-2385.



A set of VHF rabbit ears or those made specially for FM reception work well in suburban areas. Some feature electronic "tuning" and amplification circuits for better reception.

An ordinary rooftop VHF TV antenna provides excellent FM reception. An inexpensive "splitter" permits you to use the TV and FM at the same time with very little signal loss.

In extremely weak reception areas, a special outdoor antenna may be the only solution. Such antennas can receive stations up to 175 miles away over flat terrain.

Many new homes and apartments have built-in 75 ohm antenna lead-in systems. Your Receiver is designed to be used with either 300 ohm or 75 ohm type antenna systems. See the antenna connection drawings at the right of page 4, the shield portion of the 75 ohm cable must be connected to the GND screw.

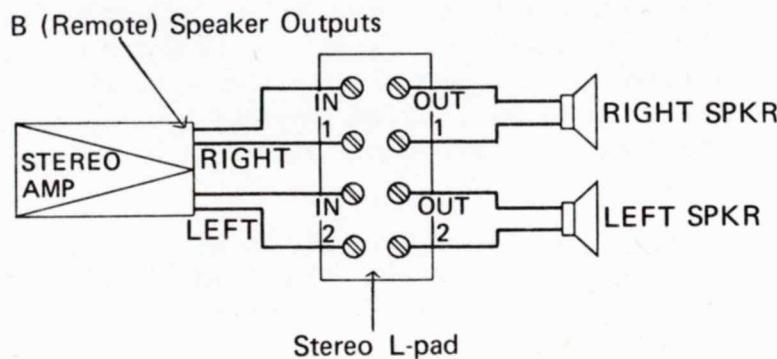
For AM, a long piece of wire strung outdoors between two insulators can greatly increase AM long-distance reception.

NOTE: To protect your receiver use a lightning arrestor on any outdoor antenna.

Connecting an L-Pad

In some cases you may want to vary the volume of the remote, or rear, speakers separately. This can be done very simply and inexpensively with a stereo L-pad, such as Radio Shack Catalog Number 40-979.

In the Quatravox mode the relative volume of the front and rear speakers is pre-set for most speaker arrangements. If you have an unusual room set-up or speakers of different types, an L-pad on either front or rear speakers can optimize your system's sound.



Tape Recorder Care

A clean, demagnetized recorder will give its best performance for many years, while a dirty recorder can mangle or ruin pre-recorded tapes in a very short time.

An inexpensive demagnetizer (degausser) removes residual magnetism from the tape heads. This will insure the lowest possible hiss and distortion and the best possible high frequency response. Always clean and demagnetize your recorder before making critical recordings. Under normal conditions you should demagnetize your recorder after every 10-15 hours of play.

With normal use you should clean the heads and metal tape guides once or twice a month with a special solvent such as Realistic Recorder Cleaner (catalog number 44-1010). Moisten a clean cotton swab with fluid and rub the heads with short circular movements. Then clean oxide deposits from all metal tape guides. There are also a number of cloth cleaning tapes which can be played like a tape for fast, easy cleaning.

You can even use your demagnetizer to help remove oxide particles trapped deep in the head gaps. Place a cleaner-moistened cotton swab over the gap and bring the demagnetizer into contact with it. Move the swab and demagnetizer in short, circular sweeps. Gradually withdraw the demagnetizer and remove the dirty swab.

Yearly preventive maintenance by an authorized technician reduces the possibility of expensive major breakdown and keeps your recorder in peak operating condition.

Headphones

Any stereo system can benefit from a good pair of stereo headphones. They provide the convenience of private listening and many people find the heightened stereo effect of headphones very exciting. Stop by your Radio Shack store to hear some of the headphones we sell — you'll be pleasantly surprised.

The STA-47 will accept any low impedance headphone through its front panel jack. Through its speaker outputs it will drive even the finest electrostatic headsets.

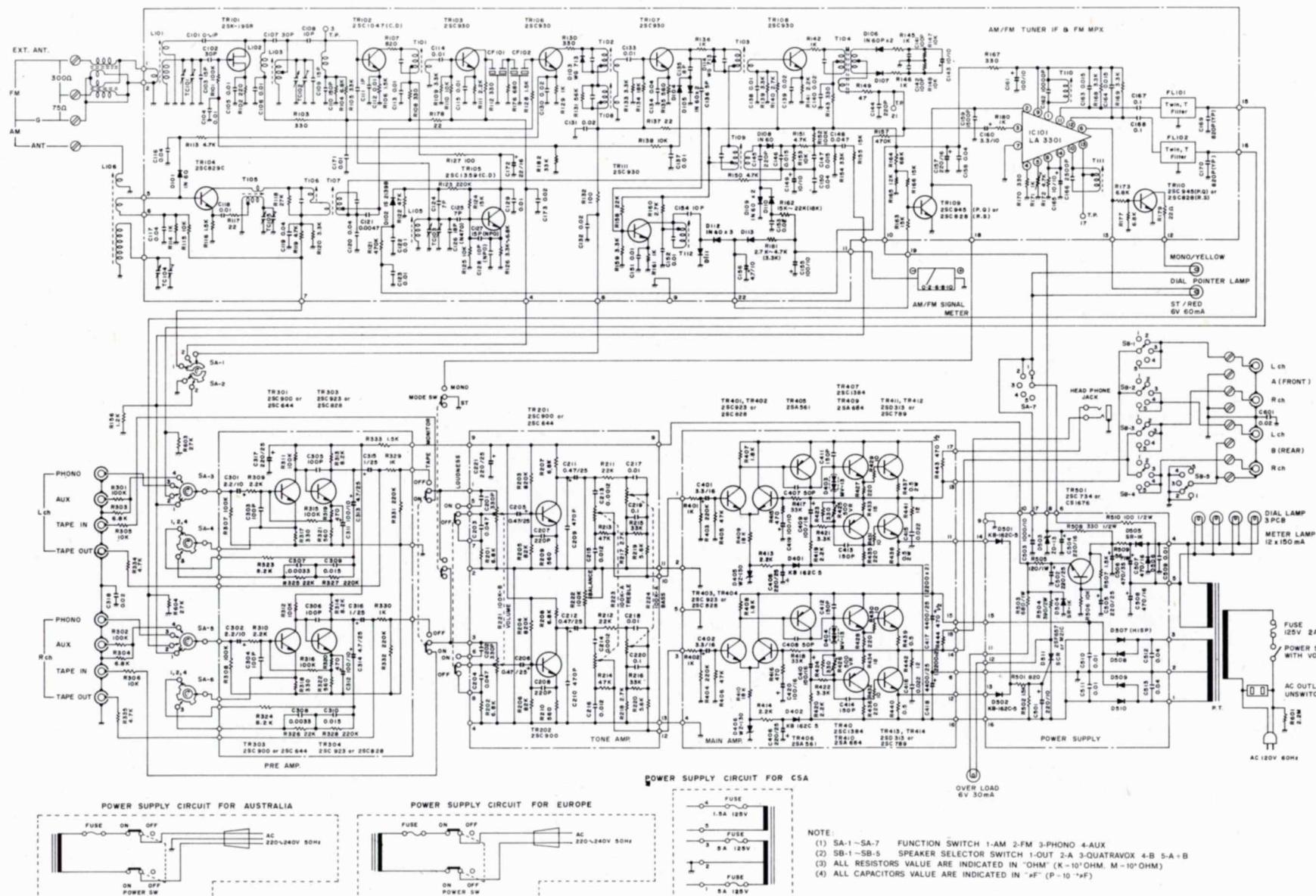
Caring For The STA-47

The STA-47's walnut veneer case looks best when it is polished occasionally with lemon oil. Waxing produces a more glossy finish than oiling but care must be taken to prevent a wax buildup.

Clean the metal parts of the front panel with a soft, damp cloth (do not use abrasives or solvents). The dial face is plastic and should not be cleaned with solvents.



SCHEMATIC DIAGRAM



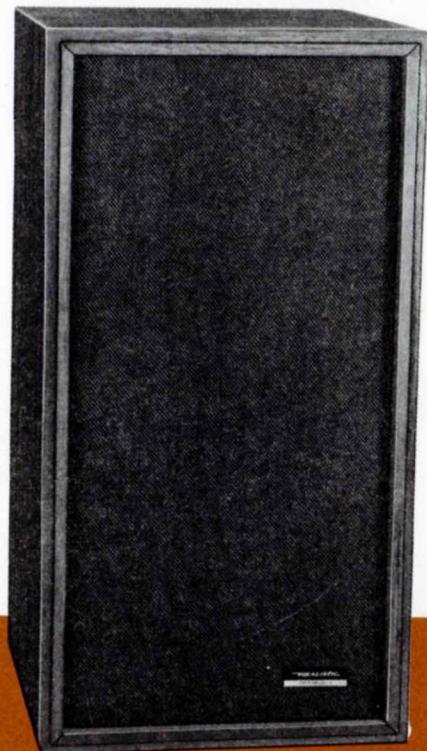
Guaranteed Quality from the builders of the famous ELECTROSTAT-3 TWEETER

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Solo Series



Optimus[®] Series



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CANADA: BARRIE, ONTARIO, CANADA L4M 4W5

TANDY CORPORATION

AUSTRALIA

280-316 VICTORIA ROAD
RYDALMERE, N.S.W. 2116

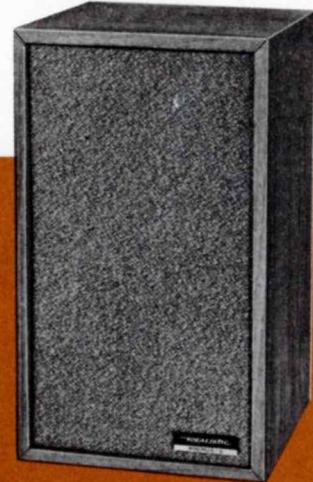
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Minimus[®] Series



Over 1,000,000 Realistic loudspeakers have been sold in recent years through the nationwide Radio Shack chain. Since the development of its widely acclaimed electrostatic tweeter — now used in our Electrostat-2a system, Realistic has had an enviable reputation for building good speakers at lower than usual prices. Our Solo Series has a five-year guarantee. Our Optimus, Electrostat, Nova and Minimus Series have lifetime guarantees. Every speaker is engineered by us, not just "a box with a label." And though speakers are meant to be heard and not seen, every Realistic speaker is born as beautiful as it sounds. Choose from over 20 different models.